

Exhibit 14



**Professional Analysis
and Consulting, Inc.**

4951 Indiana Avenue, Suite 600
Lisle, IL 60532

Project No. 2068

ELVIS RAMÓN GREEN BERRÍOS

v.

SIG SAUER, INC.

Report Prepared for:

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Report Prepared by:

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Date of Report: April 28, 2023

Introduction

On January 6, 2021, Mr. Elvis Ramón Green Berrios, a Puerto Rico Police Department Officer was carrying his Sig Sauer P320 firearm in a Sig Sauer Safariland inside the waistband (IWB) holster. After arriving home from a family gathering, Officer Green was in the process of removing the firearm and holster together from his waist, when the firearm had an un-commanded discharge without the trigger being pulled. The firearm was fully seated in the holster when it fired. The bullet entered Officer Green's right thigh which caused serious injuries.

Professional Analysis and Consulting, Inc. was retained to perform an independent investigation into this incident and to provide a report of our findings.

Professional Qualifications

Professional Analysis and Consulting, Inc. (Professional Analysis) is a technical consulting firm specializing in product performance and root cause failure analysis and prevention. The Curriculum Vitae (C.V.), testimony list, and fee schedule of the author are appended as Attachment A.

Timothy M. Hicks, P.E. is a Principal Engineer and has a diverse background in mechanical design and system evaluations, including accident reconstruction. He spent close to 20 years in various roles in the automotive industry, responsible for the design, manufacturing, testing, and validation of vehicle systems. He also has experience in leadership roles for commercial vehicle suppliers and manufacturers, including leading advanced engineering teams. This experience includes conformance to governmental regulations, equipment safety, maintenance and service requirements, and field performance investigations. As part of his consulting experience, in addition to a wide variety of accident investigations, and product failures, he has performed numerous investigations and certification tests on firearms and firearm safety devices, pursuant to California and Massachusetts regulations, and for incidents involving firearms. For the investigation described in this report, including other Sig Sauer cases, his investigation methods are in accordance with the generally accepted standards and practices of his field, including utilizing the scientific method.

Mr. Hicks is a Professional Engineer licensed by examination in the State of Illinois, and by comity in other states. The various states require a license for engineers offering services to the public because they recognize that engineering affects safety. The code of ethics for engineers holds public safety paramount.

He is an active member of the Society of Automotive Engineers (SAE) and has been elected as Chair of the Chicago Section in 2018 and has been reelected each year since. The Chicago Section numbers over 1,000 members. He is also a member of the American Society of Mechanical Engineers (ASME), and the National Society of Professional Engineers (NSPE). He also holds Certificates of Eligibility from the California DOJ Bureau of Firearms and Massachusetts Firearms Records Bureau Executive Office of Public Safety for analyzing and performing firearm certification testing. He also is a Sig Sauer certified P320 armorer.

Materials Reviewed and Inspection Conducted

Attachment B, along with the footnotes and references herein, outline the materials reviewed by Professional Analysis with respect to this matter. This list includes materials compiled through Professional Analysis' own research. Several other similar incidents of un-commanded discharges have been captured on video and were also reviewed. These include a SEPTA police officer, a Roscommon, Michigan sheriff, a Honesdale, Pennsylvania officer, an ICE agent in St. Rose, Louisiana, a Milwaukee Police Department officer, and an ICE agent in St. Clair, Michigan. None of these incidents occurred with the law enforcement officer's hand/finger on or near the trigger.

On November 2, 2022, there was a visual inspection of the subject P320 firearm and magazine by a Sig Sauer consultant, which included basic function tests and photographs. It was reported that the Puerto Rico Police Department armorer had also inspected the firearm prior to the November 2022 inspection. The armorer's deposition has not yet been made available for review.

The firearm underwent basic functional testing which was performed by the Sig Sauer consultant under controlled laboratory conditions, according to previous protocols. These included items such as magazine catch, slide catch, magazine release, trigger function, disconnect function, and firing pin function, each run five times. The firearm was also cycled 100 times while holding it, then pushing and pulling the slide assembly against the grip module. After these basic functional tests, the trigger pull force was measured and found to range between 6.5 and 6.75 pounds for all five of the tests. Finally, the firearm was then disassembled for further analysis. This allowed for photographs to be taken of the various components which included the firing control unit, trigger mechanism, and striker assembly.

On March 29, 2023, the subject P320 was shipped to Professional Analysis for further inspection and CT scans to be captured. The consultant from Sig Sauer was also present. The firearm was still in the unopened package as received from Puerto Rico. CT scans and 2D x-rays were performed at Alloyweld Inspection, in Bensenville, Illinois.

The firearm was then brought back to Professional Analysis for further analysis. This included disassembling the firearm to inspect individual components and to take measurements and capture images with a stereomicroscope. The subject firearm was identified as having Serial No. 58H014298, an upgraded version of the full-sized carry P320 chambered in 9 mm. The subject firearm was somewhat dirty, and was otherwise in an as-manufactured condition, except for normal and anticipated wear.

Functional tests representative of expected and reasonable usage and loading conditions, such as vibration, impact, and inertial forces while the firearm is holstered and used, were not performed due to over a hundred other similar incidents in the field, many of which were captured on video. Sig Sauer has testified in another matter that their engineers do not know how to develop an endurance test that would be representative of holstered usage.¹

¹ Frankenberry vs Sig Sauer, Sean Toner deposition

Background

On January 6, 2021, Puerto Rico Police Department Officer Green, of the Bayamón Motorized Unit Division, returned home from a family gathering for a holiday celebration. After showering, Officer Green put on shorts and a t-shirt in order to take his dog out and close the gate to the house. He grabbed his P320 which was still in the Safariland IWB holster and put it on his person. After walking to close the gate, he returned back to the stairs to the house and began to remove the firearm and holster together. It was at this point that the P320 discharged, without a trigger pull, striking him in the leg.²

The bullet struck Officer Green's right thigh while he was on or near the stairs to the house. He tried to call his dad to help him and passed out shortly after doing so. The spent casing was retained, along with the subject firearm, by the Puerto Rico Police Department after the incident. The holster and casing have not been made available for inspection, but Officer Green testified that the end of the holster exhibited some heat related damage. No photographs of the holster have been reviewed, and it is not clear where the subject firearm, empty casing, and holster were found immediately after the discharge.³

Officer Green had been employed by the Puerto Rico Police department since 2004. Prior to working for the Police Department, he was employed as a corrections officer. In both positions he was required to carry a side arm. He was issued the subject Sig Sauer P320 a couple of years before the incident. He was required to qualify on the subject P320 twice a year. Officer Green stated that he has not had to fire the weapon while performing his duties as a police officer.⁴

The P320 was Sig Sauer's first striker fired pistol design, introduced in 2014, and was based on the P250 frame, barrel, and magazine. In 2017, Sig Sauer was awarded a large military contract to supply two different versions of the P320 (M17 as a full size and M18 as a compact version), but the military required a redesign due to safety concerns to address drop performance and to include a manual safety on all their firearms. No external safety was present on the subject firearm, and the Sig Sauer P320 and P365 are the only two striker fired pistols on the market without an external safety. Over 100 other reported incidents of similar discharges without the user pulling the trigger have been reported across the United States, some of which have been captured on video. Many of these cases have involved different law enforcement agencies, some of which have prohibited the further use of the P320 model by their officers.

In 2017, Sig Sauer initiated a voluntary upgrade program, instead of a recall, to change the trigger mechanism, along with changes to the safety lever and sear. Firearms produced after the date of the voluntary upgrade would have the design changes included, but anyone who had purchased a P320 before the upgrade would have to send the firearm back to Sig Sauer for the repair. The subject P320 firearm involved in this incident was the Sig Sauer upgraded version and was otherwise in as-manufactured condition, except for normal and anticipated wear.

² Deposition of Officer Green, Vol I, November 2, 2022, pages 41 - 48

³ Deposition of Officer Green, Vol I, November 2, 2022, pages 56 - 60

⁴ Deposition of Officer Green, Vol I, November 2, 2022, pages 23 - 26



Figure 1 - Subject Sig Sauer P320 (left), exemplar Safariland P320 IWB holster (right)

Findings and Analysis

Examination of Officer Green's firearm found several defects, consistent with several previous P320 firearms inspected, which fired un-commanded under similar circumstances. These defects support Officer Green's report of an un-commanded (no trigger pull by the user) discharge of the firearm. The following items were identified:

1. The sear and striker pin components, the engagement of which is a critical feature of this design, are produced using a Metal Injection Molding (MIM) process and do not have any secondary machining performed on the small engagement surfaces. These MIM-produced components have areas of excessive variability due to the manufacturing process. For surfaces where tight tolerances and consistent fit-up are required, MIM parts will typically have secondary processing, or machining, to eliminate the processing variation. See Figures 2 – 3.

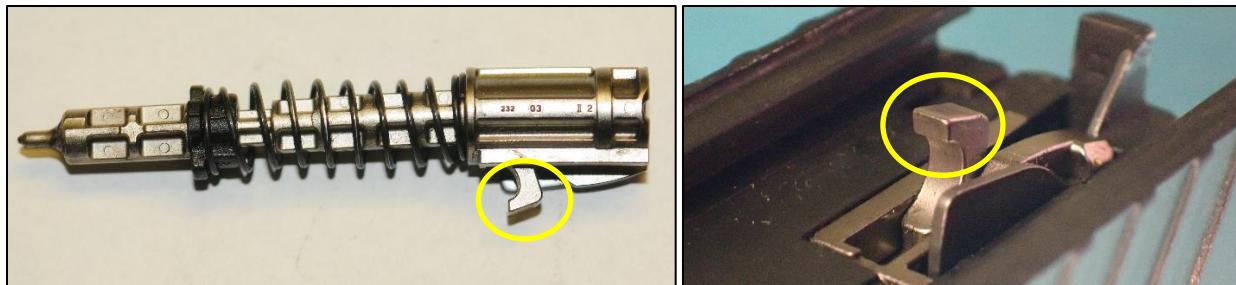


Figure 2 - Striker assembly with striker foot circled (left), striker assembly in the slide assembly (right)

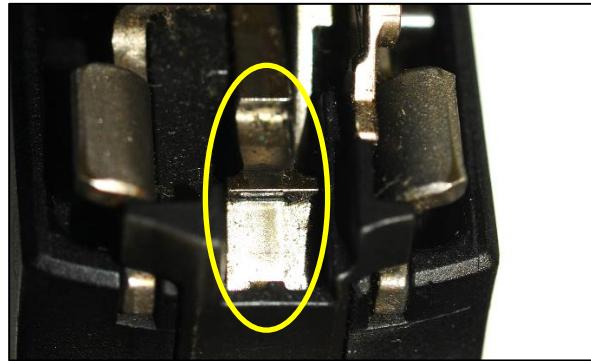


Figure 3 - Top rear view of sear (circled) and off-center striker drag marks

2. The sear and striker foot portion of the striker pin both exhibited inconsistencies on the surfaces that are in contact with each other, minimizing the actual contact surface area that is needed to keep the parts engaged until the trigger is pulled. In addition to the MIM as-manufactured surfaces (rough and unmachined), both parts also exhibited a raised area around the periphery of the interface surface and large radii on the critical edges. The end result is reduced contact surface area between both components, making the firearm more susceptible to un-commanded discharge. Figure 4 (left) is a close-up photograph of the sear step with clear wear pattern from the striker foot that shows an inconsistent pattern, including an area within the step with no wear. Figure 4 (right) is a close-up photograph of the subject striker foot showing the raised area around the periphery of the face, radiused edges, and an unmachined surface.

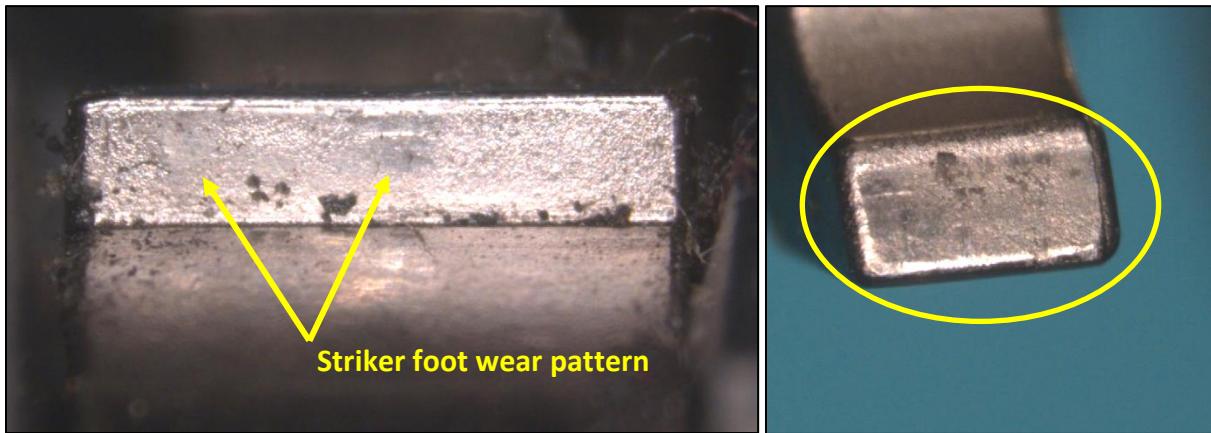


Figure 4 - Close ups of sear step (left), and striker foot (right), both unmachined surfaces

3. In comparison, the photographs in Figure 5 show the machined (or some other secondary processing after molding) surface of the striker foot and sear from other manufacturers' firearms. The photo on the bottom left is from the writer's Springfield Armory XDs striker fired firearm, which has both a tabbed trigger safety and grip safety. As discussed below, the CT scan is unable to be utilized in quantifying or measuring the inconsistencies of the surfaces of the striker foot face or the sear step face due to its limited resolution. However, feature size and dimensions, including radiused corners and edges, can be measured from a CT scan, described throughout this report.

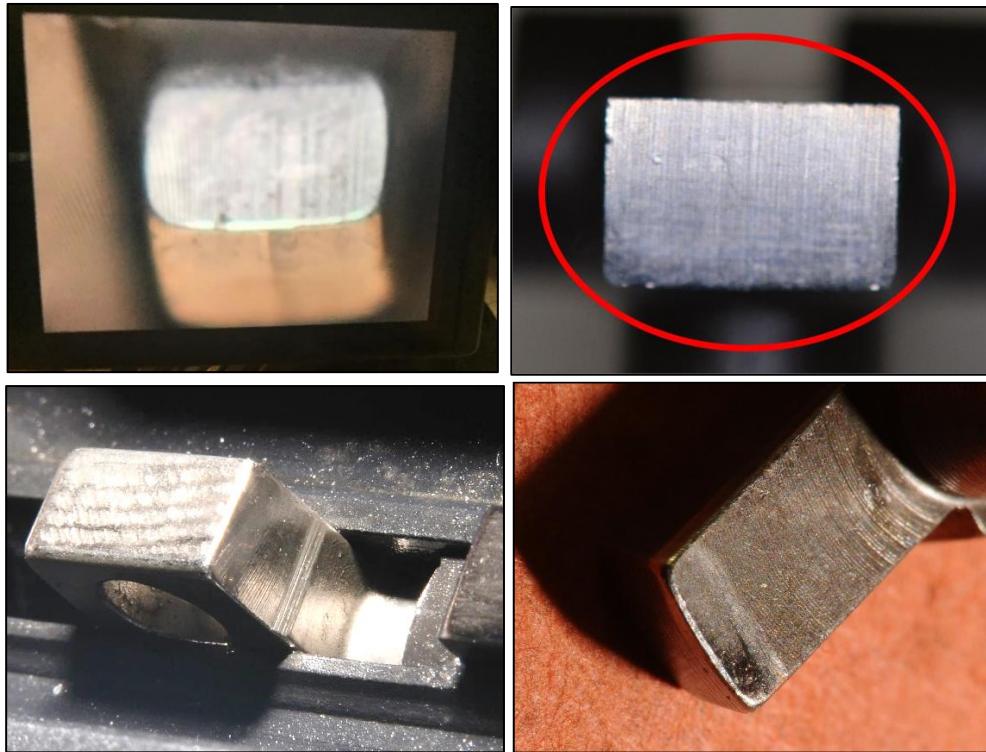


Figure 5 - Other firearms - striker foot (top left), sear face (top right), striker foot (lower left), and striker foot (lower right) all with machined flat surfaces

Additionally, the Sig Sauer Quality Control Document⁵ specifies that the trigger bar needs to be “*polished with no burrs*” but does not specify the same requirement for the sear or the striker pin. Sig Sauer recognizes the need to perform secondary processing on some parts of the P320 but chose not to do so on the sear or the striker pin. See Figure 6.

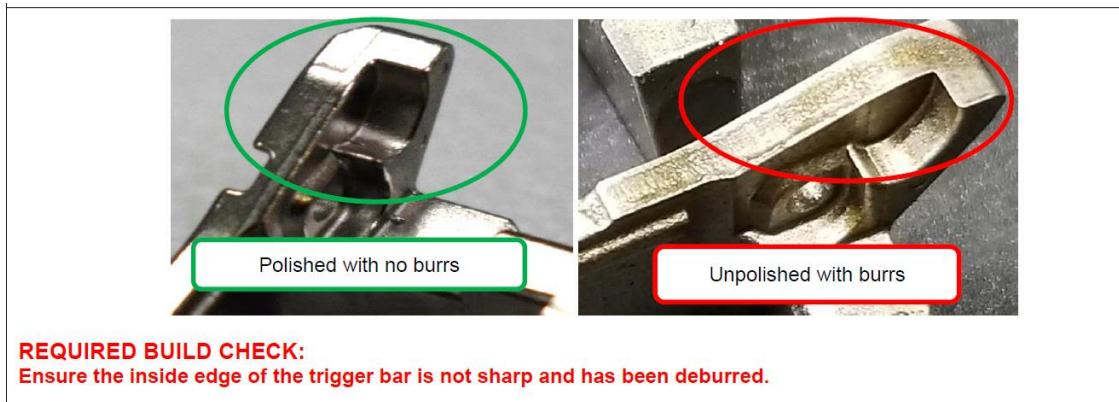


Figure 6 - Image from Sig Sauer P320 Assembly and Quality Inspection Master

4. The CT scan was also used to document the striker and sear engagement areas as compared to the drawings, shown in Figure 7. The sear step had the top surface, where the striker foot is released from,

⁵ Bates SIG-QC 000060 – Sig Sauer P320 Assembly and Quality Inspection Master, rev. 23.

measured radius at 0.005" (0.117 mm), with the Sig Sauer drawing #1302192⁶ indicating a radius of 0.1 mm. The surface profile where the striker engages indicates a tolerance of 0.2 mm, but as with the other components discussed in this report, this dimension could not be quantified with the CT scan. The Sig Sauer striker drawing #1302193⁷ indicates the radius on the bottom edge of the striker foot at 0.002" (0.05 mm). The CT scan of the bottom edge of the striker foot radius measured 0.007" (0.181 mm), larger than the specification. This drawing also indicates that the surface that engages with the sear step has a surface finish specification of 0.8, but this could not be quantified with the CT scan. Based on exemplar firearm measurements, where the surface finish was measured to be rougher than the specification, it does not appear that the subject striker foot would meet the surface finish requirement.

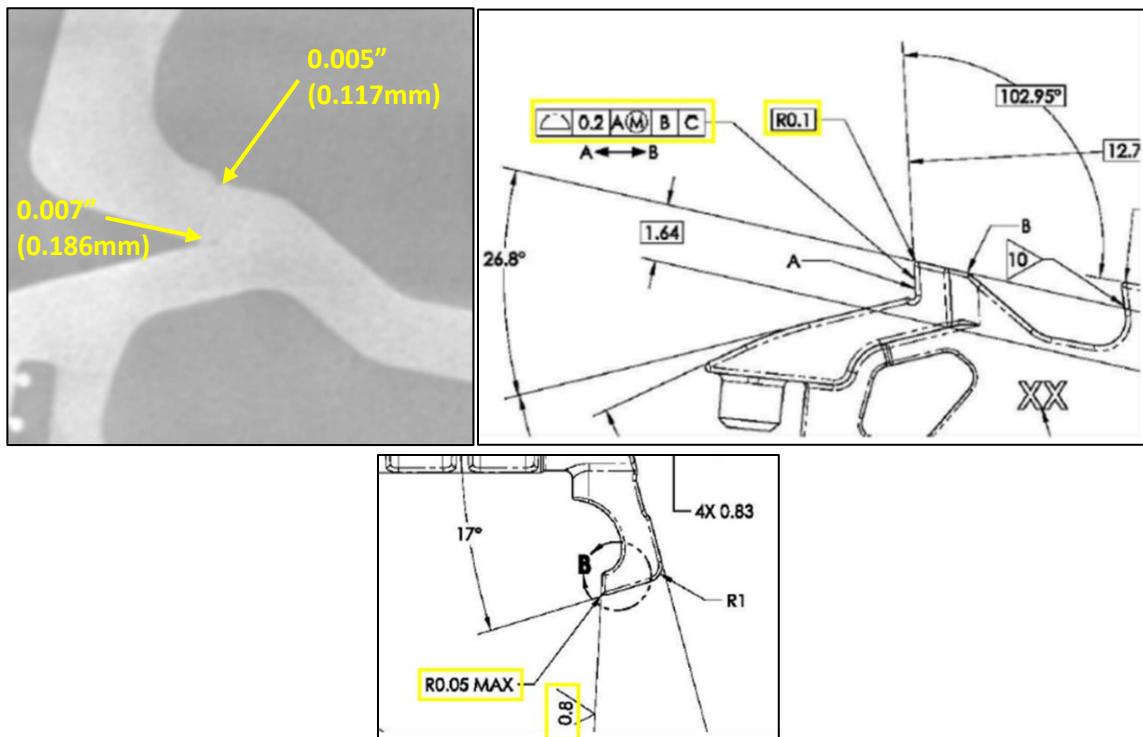


Figure 7 - CT scan of the subject striker and sear (top left), sear drawing (top right), and striker drawing (bottom)

The striker and sear were also documented using a stereomicroscope. The images shown in Figure 8 further document the striker foot manufacturing defect issues (rough surface finish, raised outer perimeter, large radiused edges, and a parting line). The sear step had a rough surface finish and radiused edges beyond specification.

⁶ Bates SIG-DRAWINGS_00000148

⁷ Bates SIG-DRAWINGS_00000158

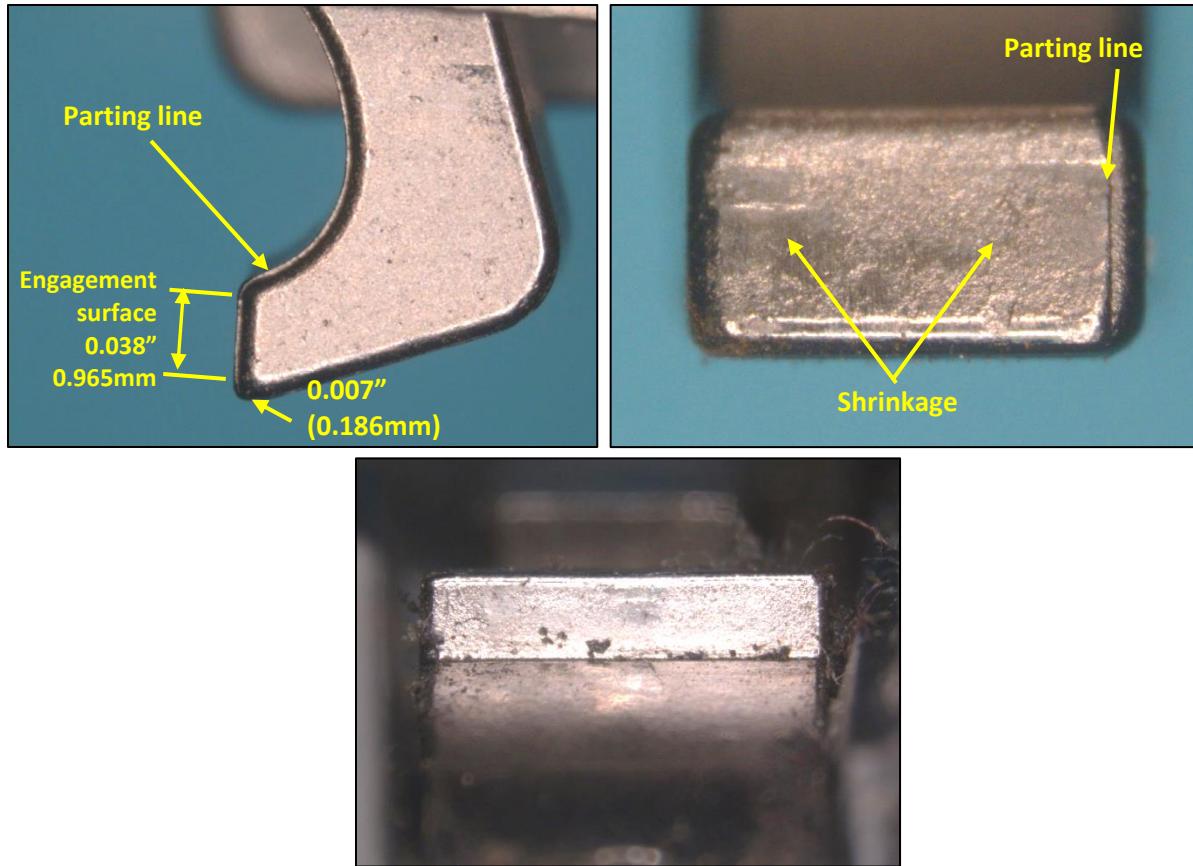


Figure 8 - Striker foot area (upper left and right), Sear with rough surface and radius edges (lower)

5. In addition to the lack of secondary processing on the sear and striker foot, there is also a vertical misalignment of the two parts, as shown in the CT scan in Figure 9. The striker foot is unable to fully engage with the sear face surface, limiting the area available for the engagement of the two parts. With the minimal amount of overlap and engagement between the two components, a minor amount of vibration, shock, or relative movement between the slide and the grip module would allow the striker to no longer be retained by the sear, and to move forward and discharge a round. In other words, the ongoing relative movement between the slide and the grip module, in addition to the inertia and vibration experienced while secured in a Sig Sauer authorized holster over time, will allow the striker foot to become disconnected from the sear face, in combination with the other defects identified in this report, including parts not meeting drawing specification. For reference, the contact surface area measured 0.038" (0.965 mm). No documentation has been produced by Sig Sauer that identified what the design specification is for the contact surface area between the striker foot and the sear. An additional 0.009" (0.227 mm) is available on the striker foot for engagement with the sear, if the sear step was larger, and both striker and sear were machined to eliminate the radius edges, in order for the components parts to meet the drawing specifications.

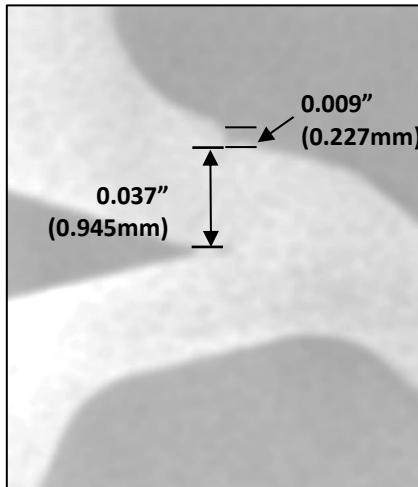


Figure 9 - Subject striker foot to sear contact surface and vertical offset

6. As shown in the CT scan below, there is also a lateral offset between the sear and the striker, causing an unbalanced force and off-center contact on the sear. This off-center contact between the two components allows the sear to be loaded laterally, causing the striker foot to make more contact on one side versus the other. When the sear is consistently loaded in one direction due to the misalignment, it contributes to reducing the actual contact surface area between the striker foot and the step in the sear. The CT scan of this offset is shown in Figure 10. Figures 3 and 4 above show the off-center and inconsistent contact area from the striker foot on the sear step.

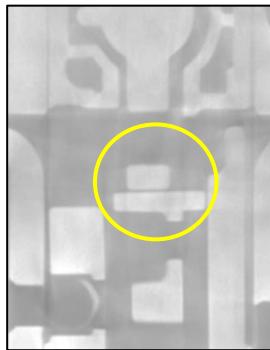


Figure 10 – CT scan slice of striker foot offset to sear

7. In looking at the rear-view CT scan slices of the striker pin relative to the housing, there are gaps within the striker housing, as shown in Figure 11 (left within yellow circle). This allows for axial rotation and movement of the striker pin within the housing each time the firearm is discharged and the slide cycles. This movement will also cause the safety lock tab that is intended to make contact with the parallel horizontal plane of the striker (striker channel) to become out of alignment, and not parallel, creating a gap. Based on the component drawings supplied by Sig Sauer, the maximum allowable angle of the striker pin to the housing is nearly 4°, however, Sig Sauer has not produced any assembly drawings that document the specification tolerances of the complete striker assembly. The misalignment and rotation will cause minimal contact between the safety lock tab and the rear vertical stop portion of the striker, thereby reducing the contact area between the two surfaces. The misalignment contributes to allowing the striker

pin to continue its forward movement when the striker foot is no longer retained by the sear, in combination with the other defects identified in this report, leading to an un-commanded discharge. The misalignment of the safety lock tab to the striker pin is also shown in Figure 11 (right).

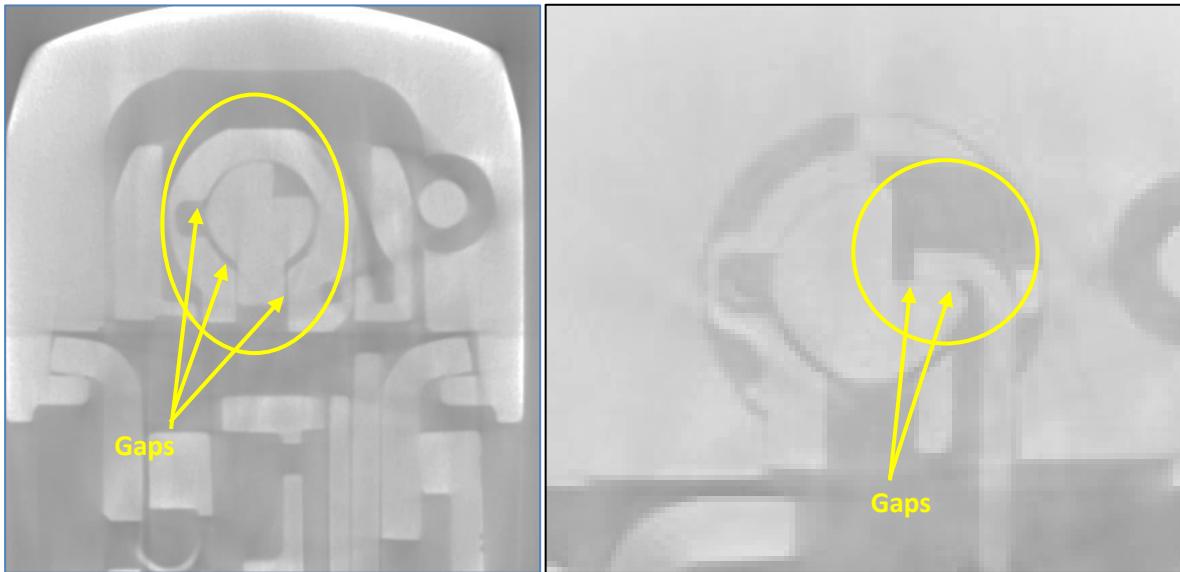


Figure 11 – CT scan view from the rear of striker gaps to housing (left) and safety lock tab misalignment to striker pin (right)

8. The CT image and photograph shown in Figure 12 illustrate the slide assembly gaps to the grip module. These gaps allow the striker foot (as part of the slide assembly) to move vertically and laterally relative to the sear (in grip module) with any vertical and lateral movement, such as that experienced while the firearm is carried in a holster, and with vibration and inertial forces. The frame receiver stamping is not made to specification which contributes to the variation and fitment issues between the slide assembly and the grip module. The horizontal tabs were measured at 96.7° and 99.2° from the vertical wall, when the drawing specification indicates 90°. Also, the overall width between the slide tabs measured 21.64 mm, smaller than the 21.71 mm minimum tolerance shown on the drawing. A digital caliper was also used to measure the width of the slide tabs, measuring 21.62 mm (rear) and 21.52 mm (front).

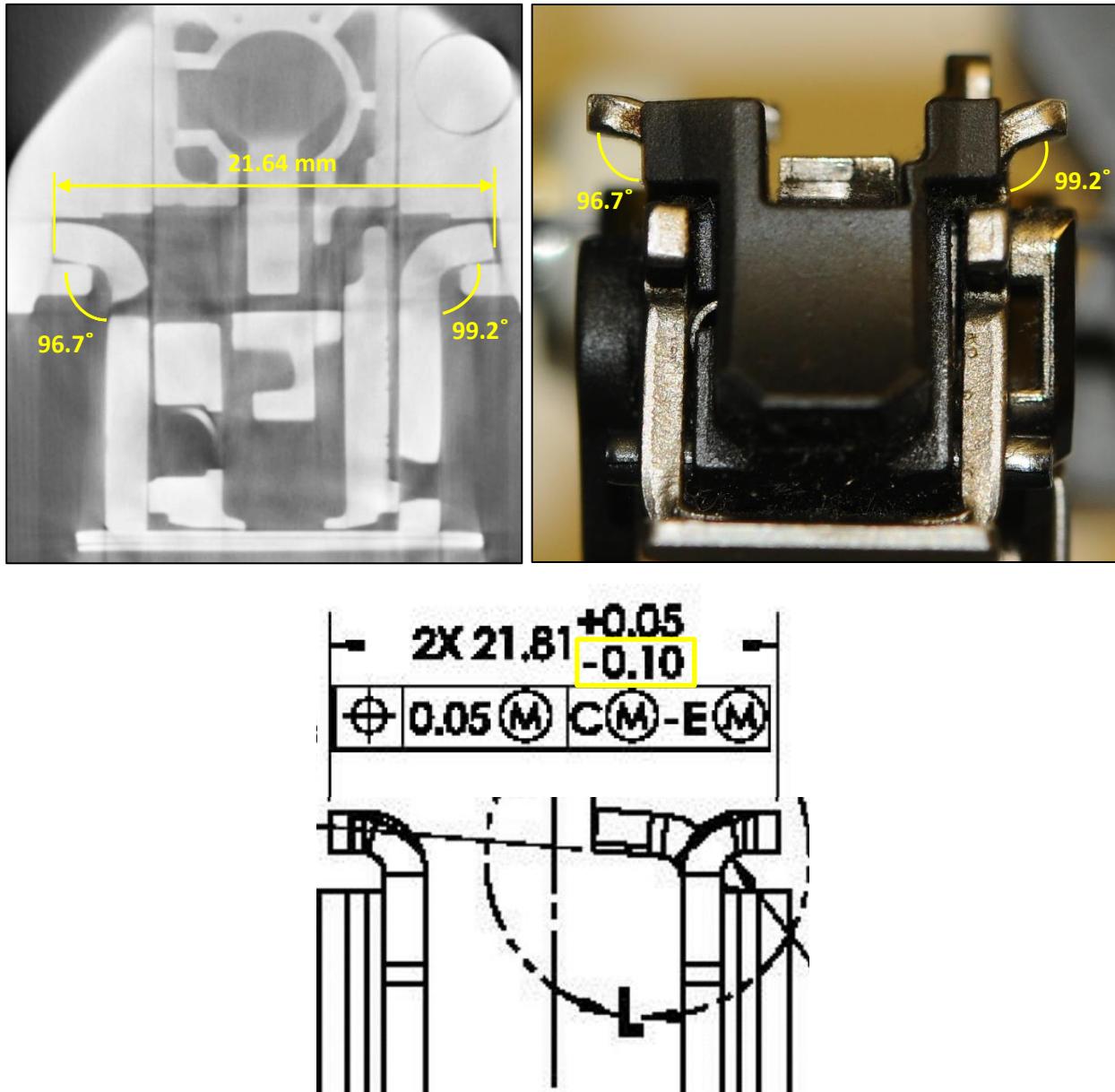


Figure 12 – CT scan showing receiver frame distortion (upper left), photograph of the same area (upper right), and image from Sig Sauer drawing #1301552

The frame receiver stamping drawing image is also shown in Figure 12 (bottom). The bottom surface of the receiver tabs are shown as datum “Z” on the Sig Sauer drawing 1301552⁸ and all four tabs have a GD&T⁹ callout specifying flatness as 0.1 mm. Since none of the four tabs on the frame receiver stamping are perpendicular or flat relative to datum “Z”, the frame receiver component does not meet the drawing specification. The bottom surface of the tabs also shows an inconsistent surface due to the forming process, providing for additional variation between the slide and grip module.

⁸ Bates SIG-DRAWINGS_00000118.

⁹ Geometric Dimensioning and Tolerancing

Additionally, the slots machined in the slide where the four frame receiver tabs are retained were 0.089" and 0.090" (2.25 and 2.29 mm) as measured with a digital caliper. However, as the slide slot dimensions or tolerances are not identified on any of the slide machining drawings produced, this measurement taken could not be compared with the specification. If these slots were also out of specification (too large), then this would also contribute to the amount of variation and play (sloppiness) between the slide assembly and the grip module.

9. In addition to the issue related to the lack of the safety lever return spring, as well as the misalignment of the safety lock and the striker components, there were also issues noted with the safety lock and the striker stop components. The tab portion of the safety lock had an inconsistent surface, due to being a stamped steel part and unfinished on the area that is intended to engage with the striker stop, shown in Figure 13 (left). Correspondingly, the striker stop surface was rounded and unfinished (MIM), as shown in Figure 13 (right). The combination of these two poorly manufactured surfaces would allow the striker to not be restrained by the safety lock, if the striker becomes disconnected from the sear, allowing an un-commanded discharge.

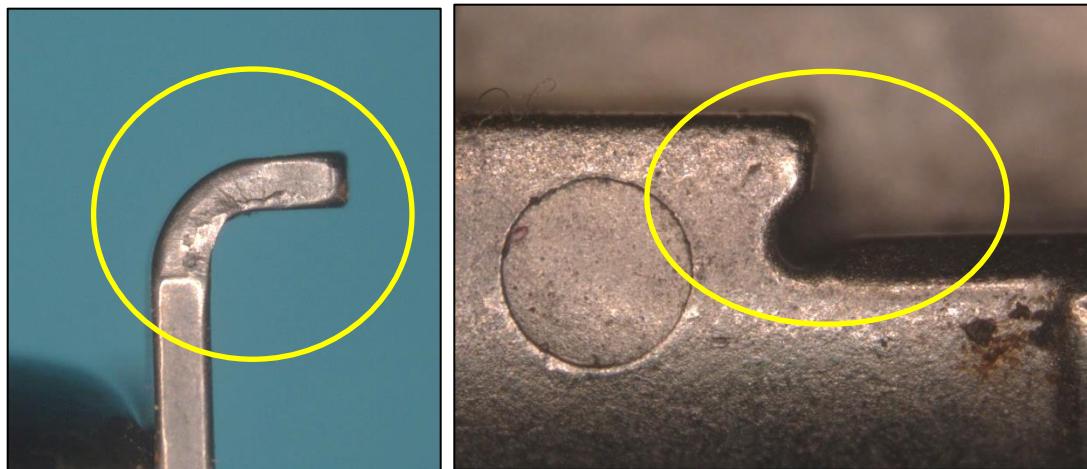


Figure 13 – Subject firearm manufacturing issues with the safety lock tab (left) and the striker stop (right)

Additionally, the CT scan and stereomicroscope were utilized to quantify certain safety lock and striker stop measurements. Figure 14 shows the CT scan measurements for the safety lock (left) and the corresponding area from the Sig Sauer drawing #1301029¹⁰ (center and right), which show the safety lock tab is not formed properly at 92.8°, with the drawing indicating 90°. The profile of the surface shown in Figure 13 (left) of the safety lock tab example, that is intended to come into contact with the striker stop, has a tolerance specified as .008" (0.2 mm). The actual surface quality could not be measured with the CT scan, but it does not appear to visually meet the drawing specification.

¹⁰ Bates SIG-DRAWINGS_00000365.

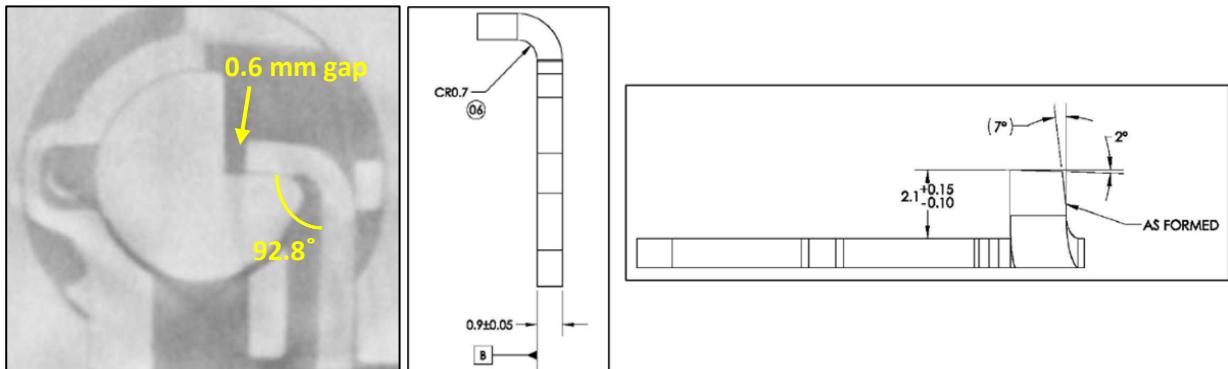


Figure 14 – Safety lock image from CT scan (left), and images from Sig Sauer drawing of safety lock (center and right)

The CT scan was also used to measure and quantify the safety lock and striker stop from a side view. Figure 15 shows the CT scan measurements for the striker stop and safety lock (top and center) and the corresponding area from the Sig Sauer drawings (bottom). These images show the safety lock tab is not formed properly since the 2.9° gap is beyond the surface profile designation on the Sig Sauer drawing¹¹ of 0.004" (0.1 mm). The striker stop has a 0.007" (0.183 mm) radius profile and is 0.033" (0.835 mm) high, compared to 0.004" (0.1 mm) and 0.035" (0.9 mm) respectively, from the Sig Sauer drawing #1302193,¹² shown in Figure 15 (bottom).

¹¹ *ibid*

¹² Bates SIG-DRAWINGS_00000158.

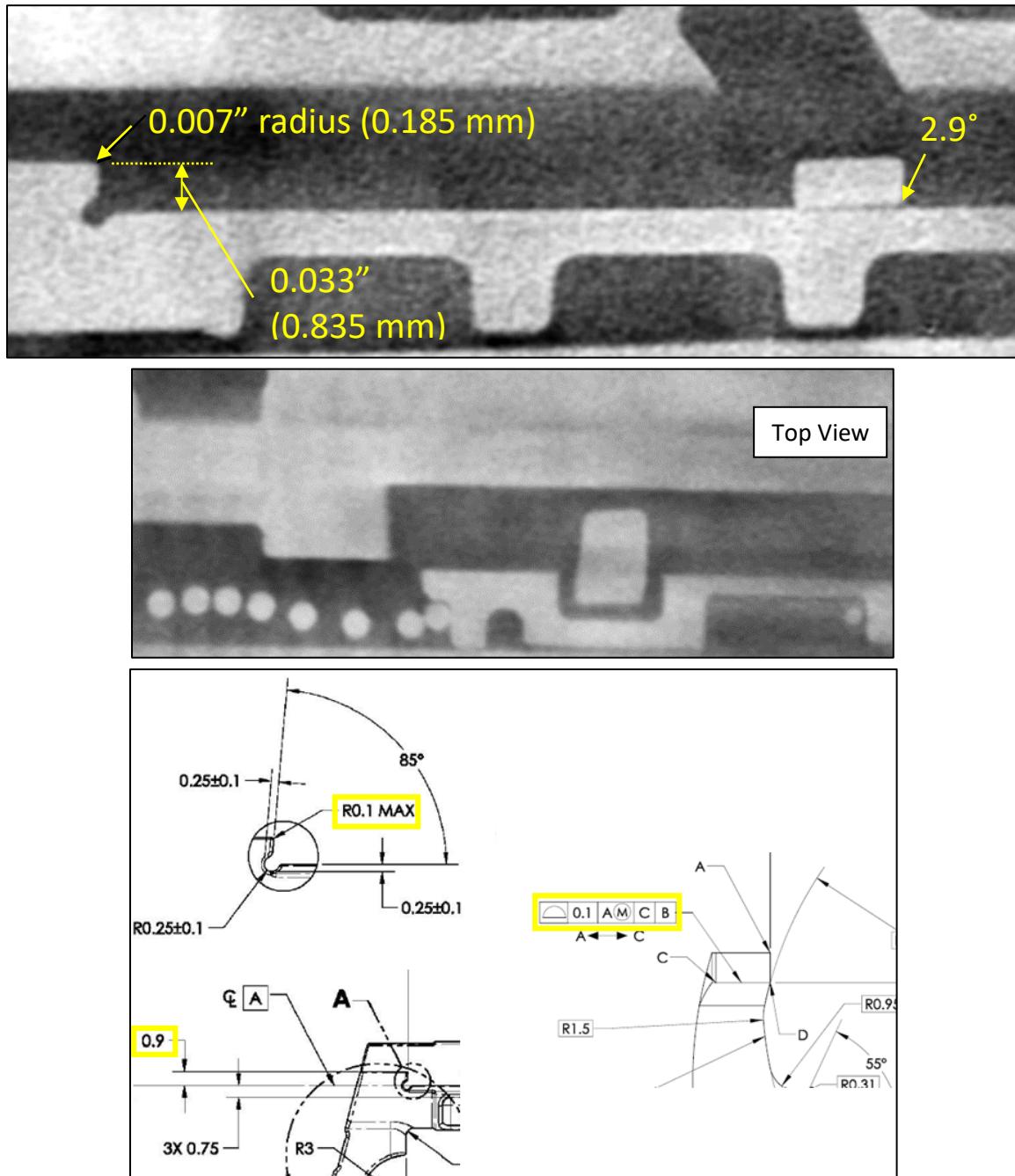


Figure 15 – CT scan of striker stop and safety lock (top), top views of same parts (center), Sig Sauer drawings of the same parts (below)

Since the thickness of the safety lock is specified as 0.035" (0.9 mm), the combination of the quality issues discussed above, misalignment of the striker and safety lock, and possible contact from the safety lever (since the return spring has been eliminated), means that with less than 0.040" (1 mm)¹³ of displacement or movement, the safety lock will not be in a position to stop the striker from moving forward if the striker becomes displaced from the sear without the user pulling the trigger. This also assumes that the parts

¹³ The thickness of 10 sheets of office printer paper

are made to the drawing specification, which they are not, in the subject firearm. The out of specification items described with the safety lock and the striker stop reduces the amount of displacement required to cause the safety lock to fail to stop the striker from contacting the cartridge.

Additionally, with the minimal amount of force and travel required on the P320 trigger to move it into a “set” mode (where the initial take up of the travel is eliminated and any further travel begins to rotate the sear), either with inadvertent contact or through vibration and inertia, will allow the safety lever to rotate and disengage the safety lock from the striker channel. This minor amount of trigger travel has been measured at 0.071” (1.8 mm) with under 1.5 pounds of force on exemplar firearms. Once the safety lock is disabled, the only feature available to keep the striker from being released is the engagement of the striker foot to the sear, measured from the CT scan as 0.038” (0.965 mm). Even if the two components (striker and sear) were made to specification, which they are not, this is an unsafe and dangerous design, given the other defects identified, and the vibration and other forces experienced during normal and reasonable use that will lead to an un-commanded discharge.

Sig Sauer Testing

In October 2021, over two years after the subject incident, Sig Sauer had vibration testing performed. This has been the only testing documentation produced by Sig Sauer in any of the litigation cases and took place approximately seven years after the P320 was introduced. Sig Sauer did not make anyone outside of Sig Sauer aware of the testing so appropriate representatives could be present. The testing was performed on ten new firearms representing different P320 models which included pre- and post-upgrade designs.¹⁴ The Sig Sauer test request dated September 2, 2021,¹⁵ states the “*Anticipated Malfunction: Loosening of components, Potential sear disengagement, wear, etc.*”. This test request, as well as the test report, both state that video documentation of each test is to be obtained. Those videos were produced in other matters and have been reviewed for this report.

The first tests performed were the vibration tests, which included sinusoidal vibration at various frequencies, and shock (jolt) testing. While the summary report from the testing facility states that no primers were struck, there were several instances of significant movement between the slide assembly and the grip module, with a couple of examples shown in Figures 16 and 17.

¹⁴ For reference, well over 1,000,000 P320 firearms have been produced since its introduction in 2014.

¹⁵ SIG-DB000809 – DB000812 – AC225 Rough Handling Test - Sinusoidal Vibration and Jolting Test Request.

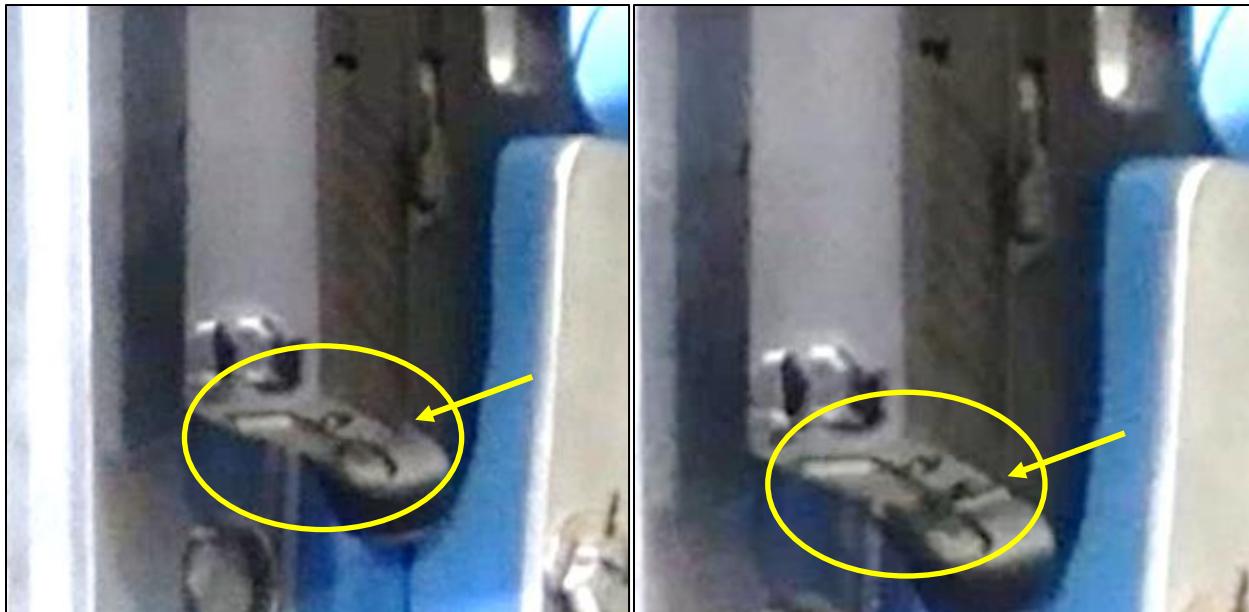


Figure 16 – Sig Sauer Vibration #1 Test #3 Showing slide moving relative to grip module

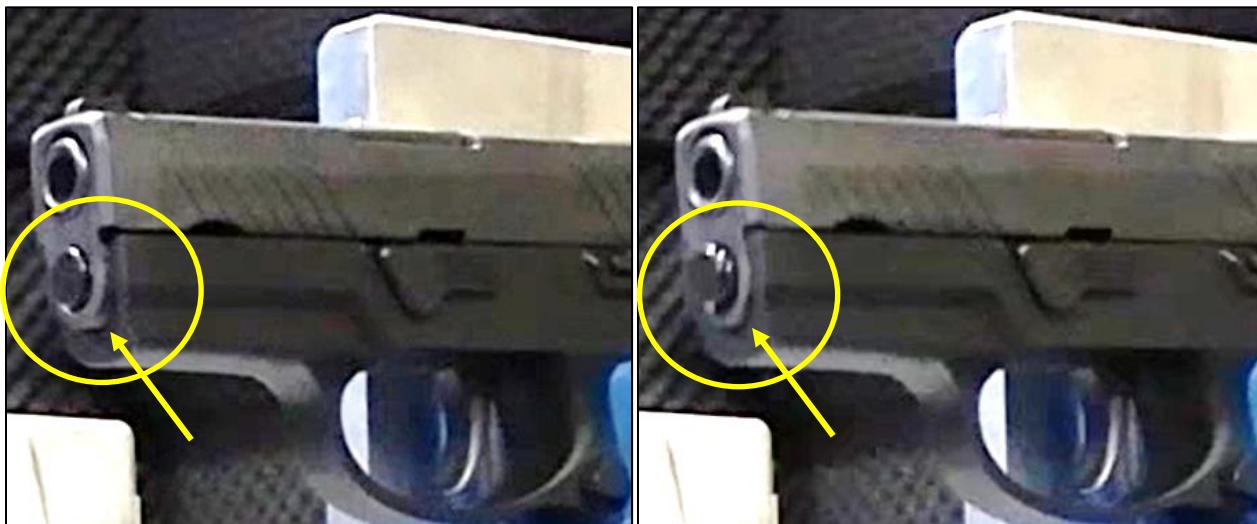


Figure 17 - Sig Sauer Vibration #2 Test #2 Showing slide movement relative to the grip module

Additionally, the vibration test #1, iteration #3 had a trigger stop pin become displaced, as shown in Figure 18.



Figure 18 - Vibration Test #1 Iteration #3 Photo #66 showing trigger stop pin displaced

During the Transportation Bounce Testing, additional issues were noticed in the same test report. In the handwritten notes and typed portion of the test report, the lab refers to two out of ten (20%) of the samples tested with the “*sear out of battery*” (out of position) while oriented with the “*vertical butt down*” position.¹⁶ All of the other remarks from the test report state the sear did not move.

It is important to note that none of the tests performed in October of 2021 included firearms secured within holsters, or with testing that would simulate real world conditions while being worn or carried. Sig Sauer has also indicated that it didn’t know how to develop and incorporate an endurance test that would account for the conditions during normal and expected usage.¹⁷ The real-world conditions would include, but are not limited to:

- Walking, running, crawling,
- Getting into and out of a vehicle,
- Removing and inserting the firearm into a holster,
- Installing and removing a holster from a belt, with a firearm inserted,
- Chasing or apprehending suspects, and,
- The firearm being carried in a holster in a backpack or purse.

No Sig Sauer test or design assessment materials have been produced from the product development process for the P320. These materials would be expected to include documentation of planning and results from Failure Modes and Effects Analysis (FMEA), design validation, durability and endurance testing, abusive event testing, and product verification tests. These studies and tests should have been performed prior to going into production.

My experience in the automotive industry involved design responsibility for thousands of different parts, including parts manufactured using MIM. While product development and verification plans can attempt to cover real world usage and performance, it is difficult to anticipate and test every scenario and condition. That is why every OEM in the automotive industry (and other government regulated industries) collects and analyzes customer field performance and reliability. Any trends that were not consistent with verification testing results, particularly for safety related issues, were investigated and design changes and/or recalls were vigorously pursued. Since firearms are not regulated by any government organization, there is no oversight for firearm manufacturers such as Sig Sauer. Additionally, there are no required U.S. safety standards for firearm performance. Therefore, no government organization can require a firearm recall, and those decisions are left to the manufacturers.

Certification Testing

Firearm certification testing is required in California and Massachusetts for any firearm manufacturers intending to sell their products in those states. After passing the firing portion of this certification testing, a primer loaded firearm also must be dropped from a height of one meter onto concrete, in various orientations, with no discharge of the firearm allowed. The Sporting Arms and Ammunition Manufacturers' Institute's (SAAMI) drop height requirement is four feet and the firearm is dropped onto a high durometer rubber mat.¹⁸ The Sig Sauer P320 is listed on Massachusetts approved firearms roster, but not in California. No other test data has been produced by Sig Sauer on the performance of the P320 relative to these state regulations, their own internal testing, and

¹⁶ Bates SIG-DB000233, DB000236

¹⁷ Frankenberg vs Sig Sauer, Sean Toner deposition

¹⁸ ANSVSAAMI Z299.5-1996 - American National Standard Voluntary Industry Performance Standards Criteria for Evaluation of New Firearms Designs Under Conditions of Abusive Mishandling for the Use of Commercial Manufacturers

firearm manufacturer guidelines. While the SAAMI guidelines are voluntary, most manufacturers will test their products to these performance standards to determine the safety and reliability when subject to outside factors, like vibration and being dropped. As stated in the SAAMI standard, *“Test parameters simulate conditions where abusive mishandling could possibly result in accidental discharge”*.

Scientific Method:

Throughout this investigation, the scientific method was utilized as described in Chapter 4 of the National Fire Protection Association (NFPA) “Guide for Fire & Explosion Investigations.”¹⁹ While NFPA 921 is a document devoted to fire investigations and explosions, Chapter 4 is entitled “Basic Methodology” because it is the best forensic definition of expert methodology with which the writer is familiar. Chapter 4 is a generic description of the scientific method applied to forensic analysis.

The scientific method template can involve the following steps:

- a. Collection of data,
- b. Analyze the data,
- c. Development of hypothesis,
- d. Testing of the hypothesis,
- e. Formation of conclusions if the test proves the hypothesis valid or ruled out if not valid.

The testing can be physical, experimental, or by calculation, as compared to the other evidence in the case. In developing any opinion, it is necessary to eliminate other possible explanations for a given set of data or observations. This can take the form of elimination or reduced likelihood as compared to more likely opinions, with reasonable engineering certainty. It is a fallacy to suggest that all testing of hypotheses must be physical. This is especially true with a product like a firearm with parts that do not even meet Sig Sauer's own specifications that has been in use for several months or years before exhibiting the issue. Additionally, Sig Sauer has stated that they do not know how an endurance test that would validate the real life and reasonable usage of a firearm in a holster would be developed.

Exhibits

If called upon to testify at trial or hearing, my testimony will reference various exhibits, including the subject and exemplar artifacts, P320 design and functionality, photographs, videos, and other documents produced during this investigation. A more detailed listing of exhibits will be produced in accordance with orders of the Court.

¹⁹ NFPA 921-2017 Guide for Fire & Explosion Investigations

Summary and Conclusions

The opinions and conclusions detailed in this report are held to a reasonable degree of scientific and engineering certainty. They are based on engineering education, experience, and training, as well as the work conducted to date and the information available at this time. This report will be supplemented as required, based on new information.

Based on the investigation and the work conducted to date, in addition to numerous other similar un-commanded discharge events, the physical evidence described in this report supports Officer Green's claim of an un-commanded discharge. The Sig Sauer P320 at issue, being carried by Officer Green, which was being removed with the holster from his person at the time of the un-commanded (no trigger pull by the user) discharge incident, was defective and unsafe for use.

There were several quality issues and defects identified and detailed in this report that prevented the firearm from reliably performing as intended under normal usage and conditions. Normal and expected movement and vibration while being jostled caused an un-commanded discharge with a combination of some or all the defective conditions described in more detail in this report, which include:

- 1) Surface quality (no secondary processing) and misalignment of interfacing sear step and striker foot. With both of these parts being out of specification, the striker became disengaged from the sear without Officer Green pulling the trigger.
- 2) The face of the safety lock tab and the vertical stop face on the striker body do not meet the drawing specification. Combined with the misalignment of the parts, they were in a condition that both of these areas failed to prohibit the striker from moving forward, without the trigger being pulled, during the subject un-commanded discharge event.
- 3) Ability of the slide (and therefore the striker assembly) to move vertically and laterally relative to the grip module (and therefore the sear) reduces the interfacing contact surface area even further, which will cause the striker foot to more easily become disengaged from the sear face. This relative movement occurs from normal body movement, vibration, inertia, and usage of the firearm. Relative movement of the components can occur even while the pistol is securely holstered.
- 4) The striker foot is unable to engage completely with the surface of the sear step due to the changes in the upgraded design, manufacturing processes and lack of secondary machining, parts not meeting design specification, and mating surfaces fit-up issues between the parts discussed in this report.
- 5) The removal of the safety lever return spring by Sig Sauer allows the lever to rotate depending on the firearm orientation and possible contact with the safety lock, which can also contribute to the safety lock to be out of position. When this issue is combined with the axial variation described in item 3 above, and the part quality issues, in addition to the minimal trigger travel to the set point rotating the safety lever and disabling the safety lock, it allows the striker to move forward completely when it becomes disengaged from the sear without the user pulling the trigger. The safety lock only has to be out of position (disengaged) or out of tolerance by the thickness of the material, which is 0.9 mm or equivalent to approximately 9 sheets of printer paper, which occurs as the trigger set point is achieved.

- 6) Without an external safety, such as a manual thumb safety, grip safety, or a tabbed trigger safety (existing technology on other products including on some Sig Sauer products), a minor amount of trigger movement from vibration, shock, or something coming into contact with the trigger, disables the safety lock. This causes the safety lock to fail, allowing the striker to contact the cartridge in the chamber if it becomes disconnected from the sear, causing an un-commanded discharge.
- 7) With the manufacturing deviations from the Sig Sauer drawings for several components, it appears that there is little or no ongoing quality inspection of the parts and assembly to ensure adherence to the drawings. The original design and GD&T specifications were deemed important enough to be on the drawings but apparently not critical enough to be verified by Sig Sauer before being assembled into a complete firearm. The firearm will not consistently perform as intended, under normal, expected, and reasonable use, with components that do not meet the design specification, and will be susceptible to un-commanded discharges.
- 8) All manufacturing processes include some form of process control and quality inspection to ensure that the design is being met. If the manufacturing processes, such as MIM, are not able to consistently produce component parts that meet the drawing specifications related to tolerances, surface finish, etc., then that is an indication that the requirements are too demanding, or the process needs to change, for example, by addition of secondary machining. If the overall performance and safety is not adversely impacted, engineering drawings would need to be modified to reflect any changes to the design or process, and then verified with testing and validation. It appears that nothing along these lines has been produced by Sig Sauer to address the defects identified in this report.

There are two features within the design of the P320 that must fail to allow an un-commanded discharge to occur. These are defined as “internal safety features” by Sig Sauer. First, the striker needs to be released by the sear, which based on the defects discussed in this report, is a precarious interface. Due to the minimal amount of contact between the two components (sear and striker), any vibration, inertia, or jostling of the firearm can cause the striker to be released. Second, the safety lock, which also exhibits defects and a compromised interface with the striker stop, does not stop the striker from making contact with a cartridge in the chamber. Because of the uncontrolled, or “sloppy” mechanism of the P320 firearm, un-commanded discharges will occur, as evident with numerous incidents across the country, with various law enforcement and experienced firearm personnel.

Report Prepared by:


 Timothy M. Hicks, P.E.
 Principal Engineer
 IL PE License No. 062-064524
 Expires November 30, 2023



Reviewed and assisted by:


 Roch J. Shirley, Ph.D., P.E., FASM
 Principal Engineer
 IL P.E. License 062-048091
 Expires November 30, 2023



Attachment A



**Professional Analysis
and Consulting, Inc.**

Timothy M. Hicks, P.E.

Principal Engineer

tmhicks@proaaci.com

331-229-3317

2012-Present **Professional Analysis and Consulting, Inc.** – Lisle, Illinois

Performs engineering investigations and failure analysis from a mechanical engineering perspective. Manages and directs large, complex projects involving multiple parties and disciplines. Projects have involved design analysis, product liability, intellectual property, manufacturing systems, accident investigation and reconstruction, fire cause and origin, and product testing. Vehicle experience includes automobiles, motorcycles, heavy trucks, motorhomes, buses, railroad, and commercial vehicles. Equipment experience includes machinery, industrial, lawn, medical, medical accessibility, sporting goods and athletic, agricultural, and construction. Other expertise includes bicycles, forklifts, automated entry doors, elevators, wind energy systems, plumbing, consumer products, firearms, and firearm safety devices. Additionally, he has investigated product packaging failures, aerosol dispenser failures involving impact, projectile and temperature/pressure studies, mechanical design, and systems modeling. He is also certified to perform California DOJ and Commonwealth of Massachusetts Department of Public Safety firearm certification testing.

2010-2012 **Packer Engineering, Inc.** – Naperville, Illinois

Senior Director of Engineering responsible for consultation in the areas of failure analysis, accident investigation and reconstruction, product testing, and design review. Managed projects in a broad range of vehicles including automobiles, SUV's, commercial trucks, RV's, buses and coaches.

2007-2010 **Motor Coach Industries International**, Schaumburg, Illinois

Director of Program Management responsible for establishing a new corporate based group of engineers to develop and introduce new product initiatives for all product and processing areas for luxury coaches. Implemented plans to identify cost reduction projects, developed industry leading proposals for new coach development projects, provided recommendations for improving product and program development processes, and identified and pursued alternate suppliers for major systems and modules for coach production.

2004-2007 **Hendrickson International**, Woodridge, Illinois

2005-2007 Senior Engineering Manager responsible for directing three engineering groups that included front suspension, concept development, and elastomers for the commercial truck, school bus, and RV markets. Developed and launched industry-leading high capacity independent front suspension for motor home and fire truck markets, established process and initiatives for generating constant flow of projects in the concept development group to sustain advanced engineering activities.

2004-2005 Senior Engineering Manager responsible for Current Products and Specialty Vehicles product development and process improvement, utilizing CAD, FEA, and ADAMS simulation. Projects included cost reduction, continuous improvement, and warranty analysis for commercial and vocational trucks, school buses, and military vehicles.

1998-2004 **Oxford Automotive Inc.**, Troy, Michigan

2003-2004 Director, Product Engineering that managed product development engineers and CAD/FEA departments for automotive OEMs. Products included metal fabricated, welded, machined and stamped components and systems.

2003 Director, Continuous Improvement that developed corporate strategy for cost reduction initiatives utilizing lean principles and Value Analysis/Engineering techniques

1999-2003 Program Manager who successfully managed suspension module program for a major OEM, taking the project from concept through launch. This included design development, tooling, capital equipment development, quality planning, and manufacturing set-up.

1998-1999 Engineering Manager recruited to develop strategy for suspension module business growth, design development, analysis, prototyping, and validation of suspension module program for a major OEM.

1986-1998 **General Motors Corp.**, Lansing and Warren, Michigan, and Lordstown, Ohio

Progressed through various product engineering roles with increasing responsibilities. Areas of responsibility included product planning, validation and testing, design development, ride and handling, and new product leadership. Products included front and rear suspensions, steering, brakes, engine mounts, drive axles, bearings, ABS/ETS, fuel systems, wheels and tires, jacks and exhaust.

1983-1986 **Progressive Blasting Systems**, Grand Rapids, Michigan

Machine design experience developing CAD skills, and hands on understanding of many manufacturing processes, including welding, machining, assembly, paint, and product quality.

ACADEMIC

M.S. Rensselaer Polytechnic Institute - Engineering Sciences
Management of Technology (1997)

B.S. Michigan Technological University - Mechanical Engineering
Solid Mechanics – Design (1983)

CONTINUING EDUCATION AND CERTIFICATIONS

- Reliability Forecasting, GM (1988)
- Vehicle Dynamics, Kettering (1990)
- Limit Handling, GM (1994)
- Commercial Tire Dynamics, Michelin (2009)
- Traffic Accident Reconstruction Methods, SAE (2010)
- Vehicle Crash Data Retrieval Technician Level 1 & 2, Northwestern University Center for Public Safety (2013)
- Vehicle Crash Data Retrieval Data Analyst, Northwestern University Center for Public Safety (2013)
- Vehicle Dynamics Basics for Off-Highway Trucks, SAE (2014)
- Reconstruction and Analysis of Motorcycle Crashes, SAE (2015)
- Operator Safety Training Program – Forklift Class IV and V, OSHA (2020)
- Crash Investigation and Reconstruction Aerial Photogrammetrist, Northwestern University Center for Public Safety (2017)
- California DOJ Bureau of Firearms, Certificate of Eligibility #47336 (2019)
- Massachusetts Executive Office of Public Safety and Security, Approved Testing Laboratory (2020)
- Operator Safety Training Program – Forklift Class IV and V, OSHA (2020)
- Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE International, (2021)
- SIG SAUER P320 Armorer Certification (2022)

PROFESSIONAL REGISTRATION AND AFFILIATIONS

- Professional Engineer, State of Illinois (License No.: 062-064524)
- Professional Engineer, State of Michigan (License No.: 6201059697)
- Professional Engineer, State of South Carolina (License No.: 30197)
- Professional Engineer, State of Texas (License No.: 131428)
- Professional Engineer, State of Wisconsin (License No.: 47825-6)
- American Society of Mechanical Engineers (ASME)
- Society of Automotive Engineers (SAE)
 - Chairman, Chicago Section (Current)
 - Crash Data Collection and Archiving Standards Committee (Current)
- National Society of Professional Engineers (NSPE)
- National Safety Council (NSC) Transportation Division (2016)

PATENTS

1. Hicks, Timothy M. and Jennings, Daniel E., “Rear Suspension Mounting Feature and Method,” 6,401,319 (2000)
2. Hicks, Timothy M. and Jennings, Daniel E., “Trailing Twist Axle and Method of Manufacture,” 6,533,300 (2000)

PRESENTATIONS

1. Hicks, Timothy and Shipley, Roch, “Testing – Techniques and Examples – Structural Integrity”, American Society for Quality Presentation, Reliability Division, October 2019
2. Hicks, Timothy, Shipley, Roch, Koehler, Michael, “Testing: Techniques and Examples, Making Evidence-Based Decisions”, American Society for Quality Presentation, Reliability Division, February 2019

Timothy M. Hicks, P.E.**TESTIMONY LIST****Depositions**

2017 Nicholas Papanicholas, Jr. vs. ITP #2, LLC, d/b/a Xtreme Trampoline. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 2014 L 0011476

Luke Keuffer and Stephanie Keuffer vs. O.F. Mossberg & Sons, Inc. and John Does 1-5. Montana Eighteenth Judicial District Court, Gallatin County, Cause No.: DV-11-547B

Rebecca Rysewyk et al., individually and on behalf of all others similarly situated vs. Sears Holdings Corporation, et al. United States District Court, For the Northern District of Illinois, Eastern Division Case No. 1:15-cv-4519

Anthony Nunez vs. Direct Auto Insurance Company. Circuit Court of Cook County, First Municipal District, Case No.: 16 M1 116163

Kathleen Brown vs. The City of Chicago, a municipal corporation. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 15 L 6900

Starla Brandon, Individually and as Heir to the Estate of Bruce Drennan, Deceased vs. Clifton Crumbliss d/b/a C & C Asphalt and Paving, TA Operating, LLC, and TA Operating Texas, LLC. District Court of Montgomery County, TX, 410th Judicial District, Case No.: 15-02-01911

2018 George D. Beucher vs. Penske Trucking Leasing Corporation, a Delaware Corporation, Shur-Lock Self Storage, Inc., an Illinois Corporation, and Roger E. Broders. Circuit Court of the Nineteenth Judicial Circuit, Lake County, Illinois, Case No.: 17 L 386

Vivia Harrison, an individual vs. Ramparts, Inc., d/b/a Luxor Hotel & Casino, a Nevada Domestic Corporation; Desert Medical Equipment, a Nevada Domestic Corporation; Pride Mobility Products Corp., a Nevada Domestic Corporation; Does 1 through XXX, inclusive and Roe Business Entities 1 through XXX, inclusive / Desert Medical Equipment, a Nevada Domestic Corporation vs. Stan Sawamoto, an individual. District Court, Clark County, Nevada, Case No.: A-16-732342-C, Dept. No. 1

Monica Roseboro Caesar v. Schindler Elevator Corporation, CESC Gateway Two, Limited Partnership, and Vornado/Charles E. Smith, L.P. Circuit Court of Arlington County, Virginia, Case No.: CL-17-001099-00

2019 Carolin Scholz, Frank Scholz, and Birgit Scholz vs. Ride the Ducks International, LLC; Ride the Ducks of Seattle, LLC. Superior Court of Washington for the County of King, Case No. 17-2-22720-0 SEA

Graciella Sanchez vs. Alejandro Pantoja. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 2017 L 009007

Timothy M. Hicks, P.E.**TESTIMONY LIST**

Shuttlewagon, Inc. vs. Scott Higgins, Emily Coon, Charles Donald Crist, John L. Ying and Innovative Quality Solutions, LLC. In the Circuit Court of Jackson County, Missouri, at Kansas City, Case No.: 1816-CV07674

2020 Jeremiah McDaniels and Stella McDaniels vs. Wolverine World Wide, Inc., Vibram USA, Inc., Safety Shoe Service, Inc., Hytest Safety Footwear, and John Getchell, a Citizen of Indiana. Porter Superior Court, State of Indiana, 64D01-1510-CT-008639

Estate of Roger R. King by Robert Wilmink, Executor vs. McElroy Coal Company, Consol Energy, Thiele GmbH & Co., Murray Energy, et al. Circuit Court of Marshall County, West Virginia, 15-C-169

Brenda Shattuck, as Administrator of the Estate of Walter DeGroff, Deceased vs. Ford Motor Corporation, JMJ Farm Holdings, LLC., Joseph Jingoli, Jr., Joseph Jingoli & Son, Inc., United Rentals, Inc. Supreme Court of New Jersey, Mercer County, Law Division, MER-L-1776-18

2021 W.S.R., an infant by and through his father, William Richardson, and William Richardson and Nicole Richardson, individually vs. FCA US LLC, Yanfeng US Automotive Interior Systems II LLK (a/k/a Yanfeng Automotive Interior Systems), Adient PLC, and Johnson Controls, Inc. / FCA US, LLC vs. JCIM, LLC. United States District Court, Southern District of New York, 7:18-CV 06961

Gordon Wietting vs. Commonwealth Edison Company and Sunbelt Rentals, Inc., Imperial Crane Services, Inc., Genie Industries, Inc., Terex Corporation and Terex South Dakota, Inc. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 18 L 003430

Michael Santos, as Plenary Guardian of the Estate and Person of Viola Santos vs. City of Chicago, and Builders Chicago Corporation. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 18 L 004609

Kelley's Trucking, LLC vs. Atkinson Truck Sales. Circuit Court for Pennsylvania County, Case No.: CL180001623-00

2022 Stephen Mayes v. SIG Sauer, Inc.: United States District Court, Eastern Division of Pennsylvania (Philadelphia), Case No.: 2:20-mc-00105-JMY

Kyle Guay v. SIG Sauer, Inc. United States District Court, District of New Hampshire, Case No.: 1:20-cv-00736-AJ

Jimmy S. C. Jinn vs. SIG Sauer, Inc.: United States District Court, Southern District of New York, Case No.: 1:20-cv-01122-PGG-RWL

Timothy M. Hicks, P.E.**TESTIMONY LIST**

Don Esbjornson vs. Black Dog Speed Shop, Inc., an Illinois Company, Gaples Enterprises, Inc., d/b/a Black Dog Racing, Inc., an Illinois Company; Tony Gaples, an Illinois Resident; Ray Sorenson, an Illinois Resident; and Joel Justus, an Illinois Resident; Dick Behrendt, an Illinois Resident. Circuit Court of the Twelfth Judicial District, Will County, Illinois, Case No.: 2015 L 000546

Cheryl Russell, Executrix of the Estate of Joyce A. McKemie, deceased vs. Christian Homes, Inc., d/b/a Washington Christian Village / Christian Homes, Inc., d/b/a Washington Christian Village vs. Invacare Corporation. Circuit Court of the Tenth Judicial District, Tazewell County, Illinois, Case No.: 2018 L 000019

Arconic Inc. vs. Novelis Inc. and Novelis Corp. United States District Court for the Western District of Pennsylvania, Case No.: 17-1434

Jacqueline Bell vs. 87th ST. Laundry Mat, Inc., an Illinois Corporation, d/b/a Mr. Bubbles, and Fusion Skill, Inc. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 20 L 012171

David Wolff, Chapter 7 Trustee of the Estate of Eugeno Sinclair vs. Nabil N. Kassem, Esq.; Kassem & Associates, P.C., Superior Court of New Jersey, Law Division, Case No.: BER-L-8831-18

Brittany B. Hilton vs. SIG Sauer, Inc. United States District, Eastern District of Texas, Beaumont Division, Case No.: 1:21-cv-00441-MJT

State of Iowa vs. Marshawn Rome Jackson, Linn County, In the Iowa Court in and for Linn County, Case No.: 06571 FECR143871

2023 Keith and Bianca Cemini Slatowski vs. SIG Sauer, Inc. United States District Court for the Easter District of Pennsylvania., Case No.: 1-21-cv-00729

Timothy M. Hicks, P.E.**TESTIMONY LIST****Trials**

2017 Kathleen Brown vs. The City of Chicago, a municipal corporation. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 15 L 6900, Judge Gregory J. Wojkowski

2018 Kathleen Brown vs. The City of Chicago, a municipal corporation. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 15 L 6900, Judge Gregory J. Wojkowski (retrial)

Anthony Nunez vs. Direct Auto Insurance Company. Circuit Court of Cook County, Illinois, County Department, Chancery Division, Case No.: 16 M1 116163

Randy G. Pate, Sr. vs. Pace Suburban Bus Division of the Regional Transportation Authority, a municipal corporation, Jocelyn Etienne. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 17 L 236

Viva Harrison, and individual vs. Ramparts, Inc., d/b/a Luxor Hotel & Casino, a Nevada Domestic Corporation; Desert Mechanical Equipment, a Nevada Domestic Corporation / Desert Medical Equipment, a Nevada Domestic Corporation vs. Stan Sawamoto, an individual. District Court, Clark County, Nevada, Case No.: A-16-732342-C

2019 Graciela Sanchez vs. Alejandro Pantoja. Circuit Court of Cook County, Illinois, County Department, Law Division, Case No.: 17 L 0009007

2020 Shuttlewagon, Inc., a Delaware Corporation vs. Scott Higgins, Emily Coon, Charles Donald Crist, John L. Ying, Innovative Quality Solutions, LLC. Circuit Court of Jackson County, Missouri, Case No. 1816-CV07674, Division 18

2021 The People of the State of Illinois vs. Jared M. Queen. Twentieth Judicial Circuit, County of Washington, Case No.: 2019-CF-40

2022 The State of Nevada vs. Elizabeth Vallaster. Justice Court of New River Township, County of Churchill, State of Nevada, Case No.: 20 CR 00519

Commonwealth of Pennsylvania vs. Brandon W. Bostian, Philadelphia Municipal Court and Common Pleas, County of Philadelphia, Case No.: MC-51-CR-0014115-2017

Kyle Guay v. SIG Sauer, Inc. United States District Court, District of New Hampshire, Case No.: 1:20-cv-00736-AJ



2023 Fee Schedule

General:

- After professional services have been agreed upon, services will be billed periodically (typically monthly) as work progresses
- Payment is due within 30 days of date of invoice
- Additional equipment usage fees may apply
- Deposition and court testimony are billed in half-day time blocks
- Travel time is billed portal to portal (unless other arrangements have been made)
- Fees subject to change on a semi-annual basis

Professional Services (in U. S. Currency):

• Administrative Support Staff	\$50 – \$95 per hour
• Hicks, Timothy M., M.S., P.E.	\$310 per hour
• Koehler, Michael G., Ph.D., ACSF	\$325 per hour
• Laun, Johannes C., P.E., IAAI-CFI, MIFireE	\$310 per hour
• Leckie, Glen K., P.E.	\$275 per hour
• O'Neill, John A. FAA A&P/IA	\$250 per hour
• Shipley, Roch J., Ph.D., FASM, P.E.	\$450 per hour

Additional staff may be involved as required

Charges for Expenses:

• Automobile Travel	65.5¢ per mile (IRS rate)
• Other Travel and Lodging	Cost – no mark up
• Specialty Supplies and Materials	Cost – no mark up
• Outside Lab Services	Cost – no mark up

Equipment, Supplies, and Reference Materials

- Charges and rental fees may apply for specific laboratory testing, field inspections, supplies, equipment, and reference materials.

Case-Related Artifact Handling and Storage

- Licensed Private Detective Agency holding Private Detective License in accordance with 225 ILCS 447 for retaining evidence.
- In compliance with ASTM Standard for evidence handling.
- Initial Receipt of Subject Artifact, Chain of Custody documentation and photography of evidence.
- Storage and Evidence Records Management Fees of subject and exemplar artifacts/evidence will be billed quarterly.

Hosting of Joint Party Inspections

- Arrangements made on a case specific basis
(Professional assistance, food, and beverages are supplied at additional cost.)

\$500 per day

Attachment B



Berrios v. SIG Sauer, Inc.

Project No.: 2068

	Classification	Description
1.	Background Compiled	American National Standard, Voluntary Industry Performance Standards, Criteria for Evaluation of New Firearms Designs Under Conditions of Abusive Mishandling for the Use of Commercial Manufacturers, ANSI/SAAMI Z299.5-1996
2.	Background Compiled	Bose, Animesh, <i>Introduction to Metal Powder Injection Molding</i> , ASM Handbook, Volume 7, Powder Metallurgy (2015)
3.	Background Compiled	National Institute of Justice, Law Enforcement and Corrections Standards and Testing Program, Autoloading Pistols for Police Officers, NJJ Standards-0112.03 (Rev. A, July 1999)
4.	Background Compiled	U.S. Army Developmental Test Command, Test Operations Procedure (TOP) 3-2-045, 09/17/2007, Small Arms – Hand and Shoulder Weapons Machineguns
5.	Background Compiled	U.S. Army Test and Evaluation Command, International Test Operations Procedure (ITOP) 4-2-602, 10/19/1993, Rough Handling Tests
6.	Background from Client	Government of Puerto Rico, Preliminary Use of Force Incident Notice 01/06/2021 (certified translation)
7.	Background from Client	Government of Puerto Rico, Service Weapon Inspection (03/08/2021)
8.	Deposition	Elvis Ramón Green Berrios taken 11/02/2022, Vol. I
9.	Deposition	Elvis Ramón Green Berrios taken 11/03/2022, Vol. II
10.	Inspection	Exemplar and other firearms photographs and data
11.	Inspection	Inspection photographs and data, T. Hicks, 03/29/2023
12.	Legal	Complaint and Demand for Jury Trial
13.	Video	Video of 11/02/2022 inspection (by Sig consultant)